Anthracnose races present on both wild and cultivated *Phaseolus vulgaris* in Mexico.

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Races of anthracnose are assigned numbers based on their virulence reaction on 12 differential host cultivars, each with a pre-assigned binary number. Similarities among race numbers tend to give a mistaken view of race similarity and virulence. The attached table shows the wide variability in anthracnose present in both cultivated and wild beans in Mexico. The data come from a number of sources in the published literature listed below. The table is designed to give the reader a more informed view of the pathogenic differences and similarities between races based on the number of virulence genes each carry and the overall similarity of certain races that may seem very different, based on race number. For example, races 192 and 448 are similar as each carry the same two virulence genes and differ in only one virulence gene for the *Co-4* gene. Likewise races 448 and 457 differ for only one virulence gene for the *Co-2* gene. Despite a smaller race number, race 457 is more virulent than race 1024, as the latter carries only one virulence gene for the *Co-6* gene, whereas the former possesses four virulence genes.

The ineffectiveness of certain anthracnose resistance genes in Mexico is clearly obvious in the table. Genes which are overcome by more than one race include the *Co-2, Co-3, Co-4,* and *Co-6* genes and those in PI 207262. This is due in part to the wide diversity of beans from diverse gene pools that are grown in Mexico and the variation of climates in which these beans are grown. Interestingly the two original Mexique I and II (*Co-3, Co-4*) genes are very susceptible to over half the races in Mexico. Breeders in Mexico need to give attention to combining better Andean and Mesoamerican genes for resistance. Use of all the alleles of the *Co-1* gene present in Perry Marrow and Kaboon as Andean sources (Melotto and Kelly, 2000), along with alleles of *Co-4* in SEL 1308, G2333 or G2338 and the *Co-5* gene in SEL 1360, TU, G2333 or G2338 as better sources of resistance in the Mesoamerican gene pool is recommended (Young et al, 1998).

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Susceptible reactions of the resistance genes in seven of the twelve differential cultivars to common Mexican races of anthracnose.

Race	Differential cultivars & genes (Binary numbers are shown under each cultivar/gene)						
	Michigan DRK	Cornell 49-242	Mexico 222	PI 207262	TO	TU	AB 136
	Co-1	*Co-2*	*Co-3*	Unknown	*Co-4*	*Co-5*	*Co-6*
0[be]							
2[ac]	2						
8[b]		8					
64[cde]			64				
72[e]		8	64				
73[a]*		8	64				
128[e]				128			
192[d]			64	128			
193[a]*			64	128			
256[bcde]					256		
264[be]		8			256		
320[abcde]			64		256		
328[e]		8	64		256		
384[bd]				128	256		
392[b]		8		128	256		
448[bcd]			64	128	256		
457[a]*		8	64	128	256		
833[a]*			64		256	512	
1024[d]							1024
1088[b]			64				1024
1344[a]			64		256		1024
1472[bc]			64	128	256		1024
1600[a]			64			512	1024

[a] Races identified by Balardin et al., 1997; [b] Gonzalez et al., 1998; [c] Races from Chapingo, Kelly, 10/1999; [d] Rodriguez et al., 1992, 1994; [e] Sicard et al., 1997. *Odd-numbered races attack differential cultivar, Michelite (no. 1) not shown in table. Sicard et al. (1997) also reported races 257, 321 and 300.